Gauge Model of High-T_c Superconductivity

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A simple gauge model of electromagnetism is presented for the description of high-T_c superconductivity. The seagull vertex term of this gauge model gives an attractive potential between electrons for the forming of Cooper pairs of superconductivity. With this seagull vertex term and a loop model of photon this gauge model gives a unified description of superconductivity and magnetism including ferromagnetism, antiferromagnetism, Bose-Einstein condensation, paramagnetic Meissner effect, Meissner effect, Type I and Type II supeconductivity and high-T_c superconductivity. The pseudogap phenomenon and the stripe phenomenon of superconductivity are explained. In this gauge model the doping mechanism of superconductivity is found. It is shown that the condition of two ionization energies of two chemical elements of a material near each other is a factor of the doping mechanism of superconductivity of the material. In this gauge model a formula of the critical temperature T_c is derived. It is shown that the critical temperature T_c is related to the ionization energies of chemical elements of superconductors. From this relation the critical temperature T_c of superconductors can be computed. For the classical superconductors and the high-T_c superconductors such as $La_{2-x}Sr_xCuO_4$, $YBa_2Cu_3O_7$, and MgB_2, the computational results agree with the experimental results.